Northwest Arkansas Community College

(Science and Mathematics Division)

Discipline Code
MATH

Course Number
2053

Course Title
Finite Mathematics

Catalog Description
MATH 2053 Finite Mathematics (F, S, SUM) A survey and applications course in mathematics designed for business, life science, and social science students. Topics include, but are not limited to: linear programming, financial mathematics, sets, probability, counting principles, measures of central tendency, measures of variation, and the normal distribution. Computer assisted, WWW, and hybrid versions of this course may be offered in addition to the traditional format. Prerequisite: College Algebra (MATH 1203) or college algebra with review (MATH 1203R) with a C or better, or appropriate placement scores (see placement chart).

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Credit Hours
3 credit hours

Contact hours
45 lecture contact hours

Load hours
3 load hours

Semesters Offered
Fall, spring & summer

ACTS Equivalent
None

Grade Mode
A-F

Learning Outcomes

Students completing this course will:

1. Set up and solve linear programming problems graphically.
2. Set up and solve standard and nonstandard linear programming problems using the Simplex Method.
3. Calculate future values, present values, interest rates, effective rates, interest amounts, numbers of years, and numbers of compounding periods using simple and compound interest formulas.
4. Calculate interest rates, interest amounts, principal amounts, payments, present values, and future values of ordinary annuities, and sinking funds.
5. Find the payment amount for an amortized loan, the portion of a loan payment that is interest and the portion that is principal; the remaining balance, the sum of all payments, and the total amount of interest paid.
6. Perform set operations; draw, interpret, and apply Venn diagrams.
7. Use basic counting techniques including the multiplication principle, permutations, and combinations to count and to find probabilities.
8. Compute conditional probabilities, probabilities of independent events, and binomial probabilities; calculate odds and expected values; and apply Bayes' Theorem.
9. Organize data; create frequency & probability distributions and histograms; and compute measures of central tendency and variation.
10. Find the percentage of area under a normal curve; find z-scores; and find probabilities using the standard normal curve.
11. Solve application problems using the skills listed in outcomes 1 through 10.

General Education Outcomes Supported

- Students develop higher order thinking skills.
- Students can achieve mathematical literacy.

Standard Practices

Topics list

- Simple Interest (optional: discount)
- Compound interest
- Annuities, future value, and sinking funds (optional topic: annuity due)
- Annuities, present value, and amortization
- Graphing linear inequalities
- Linear programming: the graphical method
- Applications of linear programming

- The Simplex method: maximization
- Maximization applications
- The Simplex method: nonstandard problems (optional: equality constraints)
- Sets
- Applications of Venn diagrams and contingency tables
- Introduction to probability
- Basic concepts of probability
- Conditional probability and independent events
- Bayes' formula
- Probability distribution and expected value
- The multiplication principle, permutations, and combinations
- Applications of counting
- Binomial probability
- Frequency distributions
- Measures of center
- Measures of variation (optional: boxplots)
- Normal distributions
- A variety of application problems from each required topic should be assigned

Learning activities

- This course should be taught using real life problems when possible.

Assessments

- Each instructor will include a set of departmental assessment questions on their assessment tool.
- These questions will be in direct support of the learning outcomes.
- Department-wide results for these questions will be reported when final grades are submitted.

Grading guidelines

- At least 70% of the grade should come from proctored work